

ROAD PLAN

SALE NAME: Aloha Adams

ROAD PLAN DATE: May 27, 2003

SCOPE OF PROJECT

This project includes, but is not limited to new construction including: clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, landing construction, acquisition and installation of drainage structures, and hauling and application of rock.

This project also includes, but is not limited to reconstruction including:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
6006.52	0+00-32+00	Brush road right of way as per brushing detail sheet, clean ditchlines and culvert head walls, grade and shape the road way, install one culvert.

This project also includes, but is not limited to pre-haul maintenance including:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
7100	0+00-12+00	Grade and shape road, clean ditchlines. Fill removal/abandonment as shown on plan view.
7100-1	0+00-9+00	Grade and shape road, clean ditchlines
Weyco Spur	MP 0.6	Fill in tank trap

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance including landings unless otherwise noted.

1.1-2

Construction or reconstruction or pre-haul maintenance of the following roads is required. All roads shall be constructed on the State's location and in accordance with the Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
6006.52	15.12 stations	Construction
6006.52	32.00 stations	Reconstruction

1.1-3

Construction or reconstruction or pre-haul maintenance of the following roads is not required. **If the Purchaser elects to use any of these roads, they shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.**

<u>Road</u>	<u>Length</u>	<u>Type</u>
LS 2+75	2.5 stations	Construction
LS 4+00	4.00 stations	Construction
LS 2+00R	2.00 stations	Construction
LS 2+75L	2.75 stations	Construction

1.1-4

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted, in writing, to the Contract Administrator for consideration. Submitted plans must be approved before construction begins.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and unstable soil.

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1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Culverts shall be installed with a backhoe or an excavator.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 6 inches dbh or over 20 feet high between the marked right-of-way boundaries and within waste areas or if not marked in the field, between clearing limits specified on Typical Section Sheet.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism, as defined by the Contract Administrator. Right-of-way timber shall not be decked in locations that impede drainage.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed.

3-2

Grubbing limits are defined as the entire area between external limits shown on the Typical Section Sheet.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all vegetative material larger than one cubic foot in volume, within the clearing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to application of rock.

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4

Right of way debris shall be scattered outside the grubbing limits.

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SECTION 5 - EXCAVATION

5.1-1 Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

5.1-3 The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

<u>Favorable Grade</u>	<u>Adverse Grade</u>	<u>Minimum Curve Radius</u>
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

5.1-4 Extra widening on the inside of curves shall be:

2 feet extra --- 80 to 100 foot radius curves
4 feet extra --- 60 to 80 foot radius curves

5.1-5 Curve widening where required, shall be added to the inside of curves.

5.1-8 Excavation slopes shall be constructed no steeper than shown on the following table (except as construction staked or designed):

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes to 55%).....	1:1
Common Earth (55% to 70% sideslopes).....	3/4:1
Common Earth (on slopes over 70%).....	1/2:1
Fractured or loose rock	1/2:1
Hardpan or solid rock	1/4:1

5.1-9 Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10 Embankments shall be widened as follows:

<u>Height at Shoulder</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11 Embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment slope ratio</u>
Common earth and rounded gravel.....	1-1/2:1
Angular rock	1-1/4:1
Sandy Soils	2:1

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5.1-12

Organic material shall be excluded from embankment shown on Typical Section Sheet and from waste material deposited on slopes in excess of 40 percent.

5.1-15

Except as listed in clause 5.1-16 (endhaul/overhaul), excavated material may be deposited adjacent to the road prism on side slopes up to 45 percent if the material is compacted and more than 100 feet away from live streams.

5.1-16

On the following road all excavated material shall end-hauled or pushed to designated waste areas. This includes material excavated for landings.

<u>Endhaul/Overhaul</u>		<u>Waste Area Location</u>
<u>Road</u>	<u>From To</u>	
7100	Fill Removal Site	Road prism, see detail sheet.

5.1-21

Waste material shall not be deposited within 100 feet of a live stream, riparian management zone, wetland, or wetland management zone unless, as shown otherwise on design sheets.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings.

5.2-1

Pioneering operations shall not undercut the final cut slope, deposit excavated material outside the right-of-way limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-1

Silt-bearing runoff, as defined by the Contract Administrator, shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds or other methods to be approved, in writing, by the Contract Administrator.

5.5-5

Finished subgrade shall be crowned as shown on the Typical Section Sheet. Grade and compact to a uniform, firm, rut-free surface to ensure surface runoff in an even unconcentrated manner.

5.6-5

Subgrade Reinforcement shall be installed as part of this project to strengthen the subgrade base. Reinforcement fabric shall be a minimum of 15 feet in width, and shall meet or exceed the properties of DuPont TYPAR 3601, Exxon GTF 300, AMOCO 2006, or Synthetic Industries Geotex 315ST.

Reinforcement is preferably accomplished by rolling subgrade fabric over the natural ground along the centerline of the road. Removal of organic material and small vegetation immediately under the fabric is usually not necessary. When culvert installations are concurrent at the site, culverts shall be positioned first to follow the natural ground, and the reinforcement fabric shall be positioned along prepared subgrade base and over top the exposed pipes before construction of the embankment.

Where natural sideslopes are excessive, excavation is required to prepare a base where the ground side slope through the road cross section at the installation site/s shall not exceed 10%. Excavated

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material from preparation of the subgrade base shall not be placed as fill material beneath the fabric layer. In the area/s specified for installation, stumps may be flush-cut and remain in the ground.

Ballast rock shall be placed directly on the fabric. Rock shall compacted in lifts, and shaped to conform to the requirements of this contract. Finished ballast depths over the fabric installation shall be increased, and transitions onto and off of the fabric installation decreased accordingly, to provide smooth transition over and across the sections of subgrade base reinforcement. The State reserves the right to require installation of reinforcement fabric in any area having unsuitable foundation conditions which become exposed during road construction, or large pipe installations and where required by the Contract Administrator. The following location/s specifically require reinforcement fabric.

<u>Road</u>	<u>Stations</u>
6006.52	1+44-2+44

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install and maintain corrugated polyethylene and/or aluminized steel Type 2 (ASTM A929, A760, A796, AASHTO M274, M36) pipe as designated on Culvert List. Culvert and flume lengths shall be varied to fit as built conditions subject to written approval by the Contract Administrator.

6.2.1-1A

Corrugated polyethylene pipe shall have a corrugated exterior and smooth interior, shall meet ASTM F405, F667 and AASHTO M252, M294 Standard Specifications, and shall be manufactured with high density polyethylene resins.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe. Annular corrugated bands and culverts ends shall be used on aluminized steel pipe.

6.2.2.1-1

Culvert, downspout, flume and energy dissipater installation shall be in accordance with Culvert and Drainage Specification Detail.

6.2.2.2-1

Any damaged aluminized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipaters shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed prior to application of rock. Ditches shall drain to culverts, ditchouts and natural drainages.

6.3-2

Shaping the ditchline, culvert headwalls and catchbasins shall be completed prior to application of rock and shall be done in accordance with the Typical Section Sheet and Drainage Specification Detail.

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- 6.4-1 Catch basins shall be constructed to resist erosion. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.
- 6.5-1 Head walls shall be constructed in accordance with Culvert and Drainage Specification Detail at all cross-drain culverts.
- 6.5-2 Embankment slopes adjacent to culvert inlets and outlets shall be armored for a distance of two culvert diameters on each side of the pipe and one culvert diameter above the pipe in accordance with Culvert List.

SECTION 7 - ROCK

- 7.1-3 Rock for construction and/or reconstruction under this contract may be obtained from commercial sources. Rock sources will be subject to written approval by the Contract Administrator prior to their use.
- 7.2.1-1 Rock shall meet the following specifications for gradation when placed on the subgrade. No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger than 12 inches in any dimension.
- 7.4.2-1 Apply at least the minimum required rock quantity as shown on the Rock List.
- 7.4.2-2 Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.
- 7.4.2-7 Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.
- 7.4.2-8 Each lift of rock shall be shaped as shown on the Rock List and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even unconcentrated manner.
- 7.4.3-3 Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

SECTION 9 - ROAD ABANDONMENT

- 9.1-1 The 7100 road shall be abandoned by the Purchaser at the fill removal site during the first available hydraulic operating season allowed by the HPA. All phases shall comply with the HPA and the fill shall be removed as per fill removal sketch map sheets. Purchaser shall grass seed and hay mulch all exposed soil including the waste areas. Seed and mulch shall be provided by the Purchaser and shall be applied at the earliest possible opportunity between July 1 and September 15. Grass seed shall be applied at a rate of 120 pounds per acre. Hay mulch shall be spread to a depth of approximately three inches.

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The diagram illustrates a cross-section of a road structure. It shows three distinct layers: a top layer labeled 'SURFACING' (represented by a dotted pattern), a middle layer labeled 'BALLAST' (represented by a cross-hatched pattern), and a bottom layer labeled 'SUBGRADE' (represented by a diagonal hatched pattern). Three horizontal dimension lines are shown above the road profile: the widest one is labeled 'SUBGRADE WIDTH', the middle one is labeled 'BALLAST WIDTH', and the narrowest one is labeled 'SURFACE WIDTH'. A center line symbol, consisting of a circle with a vertical line through it, is positioned below the road profile and labeled 'CL'. The entire diagram is captioned 'SECTION VIEW' at the bottom.

- [illegible]

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CULVERT LIST

[illegible]

Required Minimum Gauge for Metal Pipe

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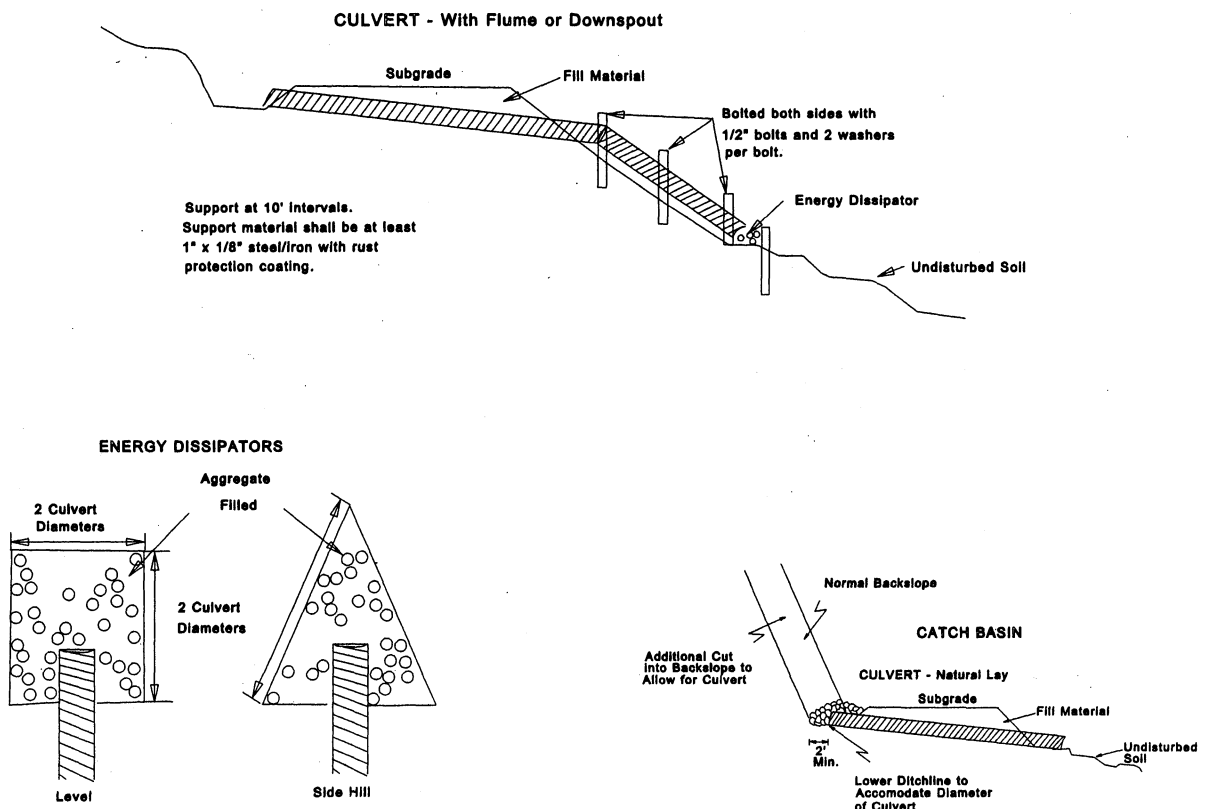
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CULVERT AND DRAINAGE SPECIFICATION DETAIL

INSTALLATION REQUIREMENTS:

1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.
2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4", whichever is smaller. All material shall be compacted in six inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.
3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



DISSIPATOR SPECIFICATIONS:

Depth: 1 culvert diameter
Aggregate: 6" plus

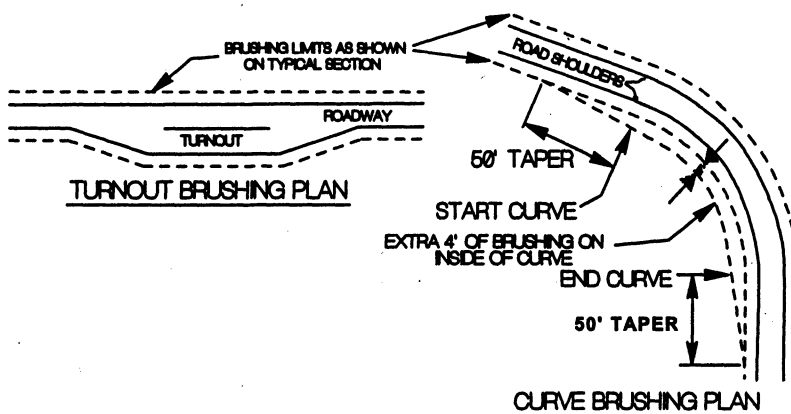
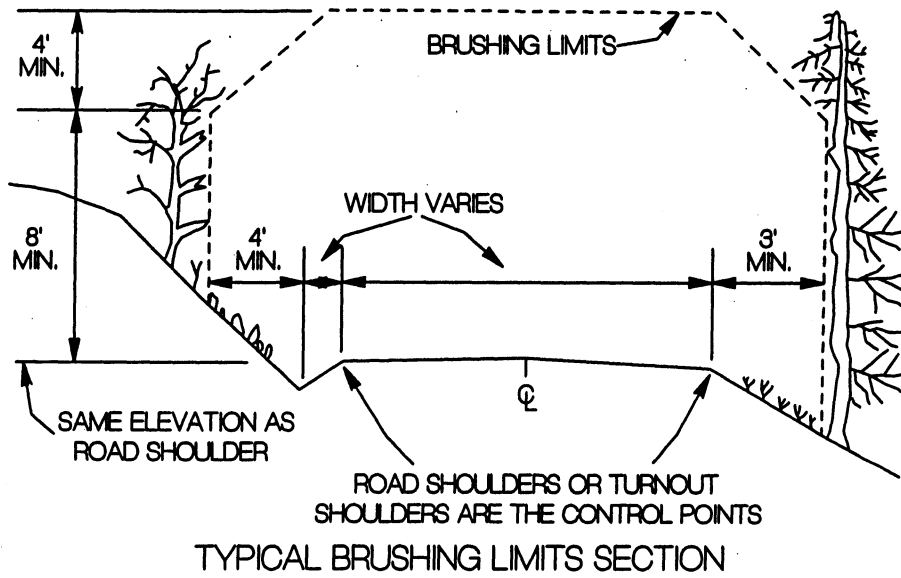
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BRUSHING DETAIL



- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8" OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
- 4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCH LINE SHALL BE REMOVED.

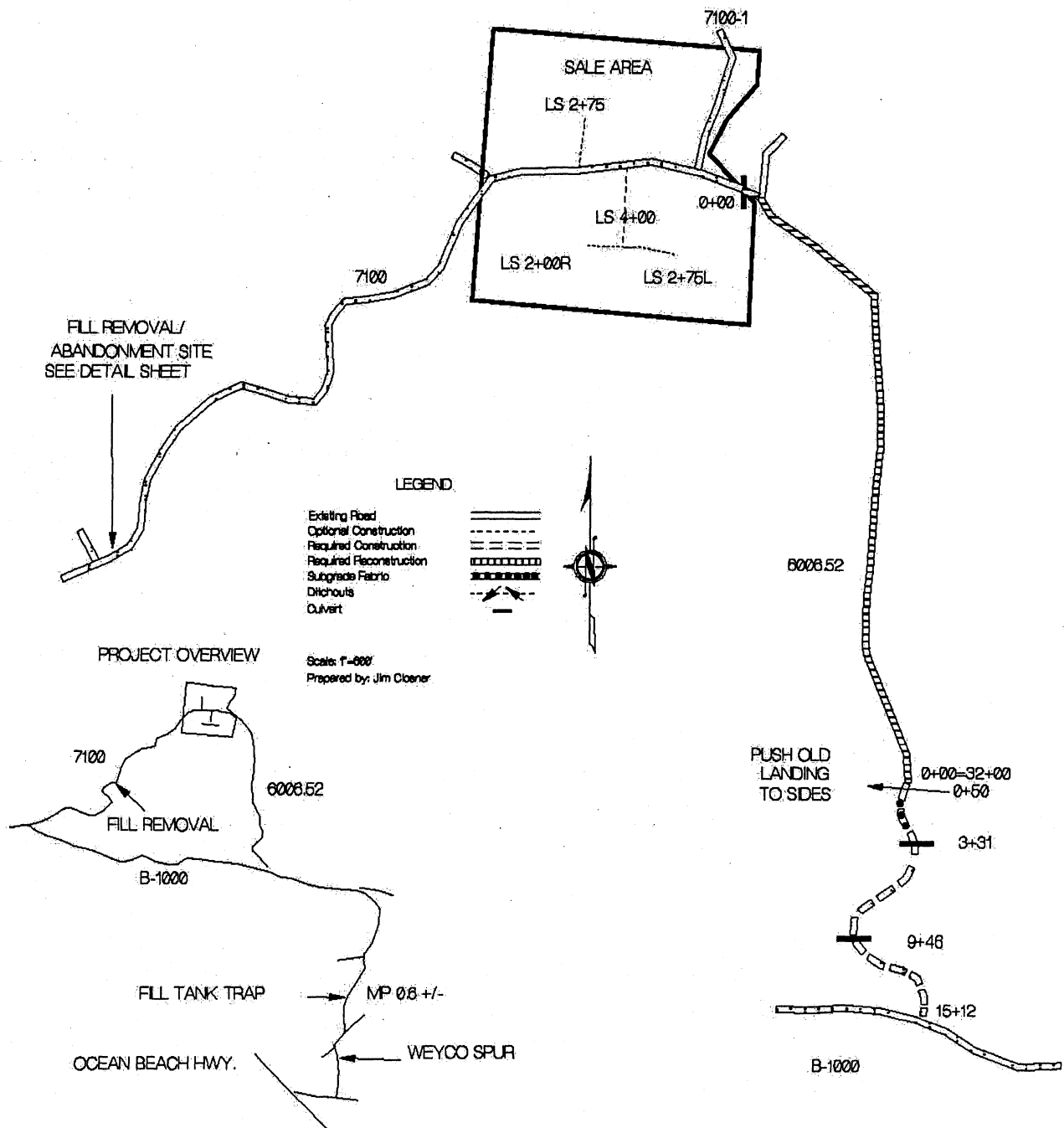
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PLAN VIEW

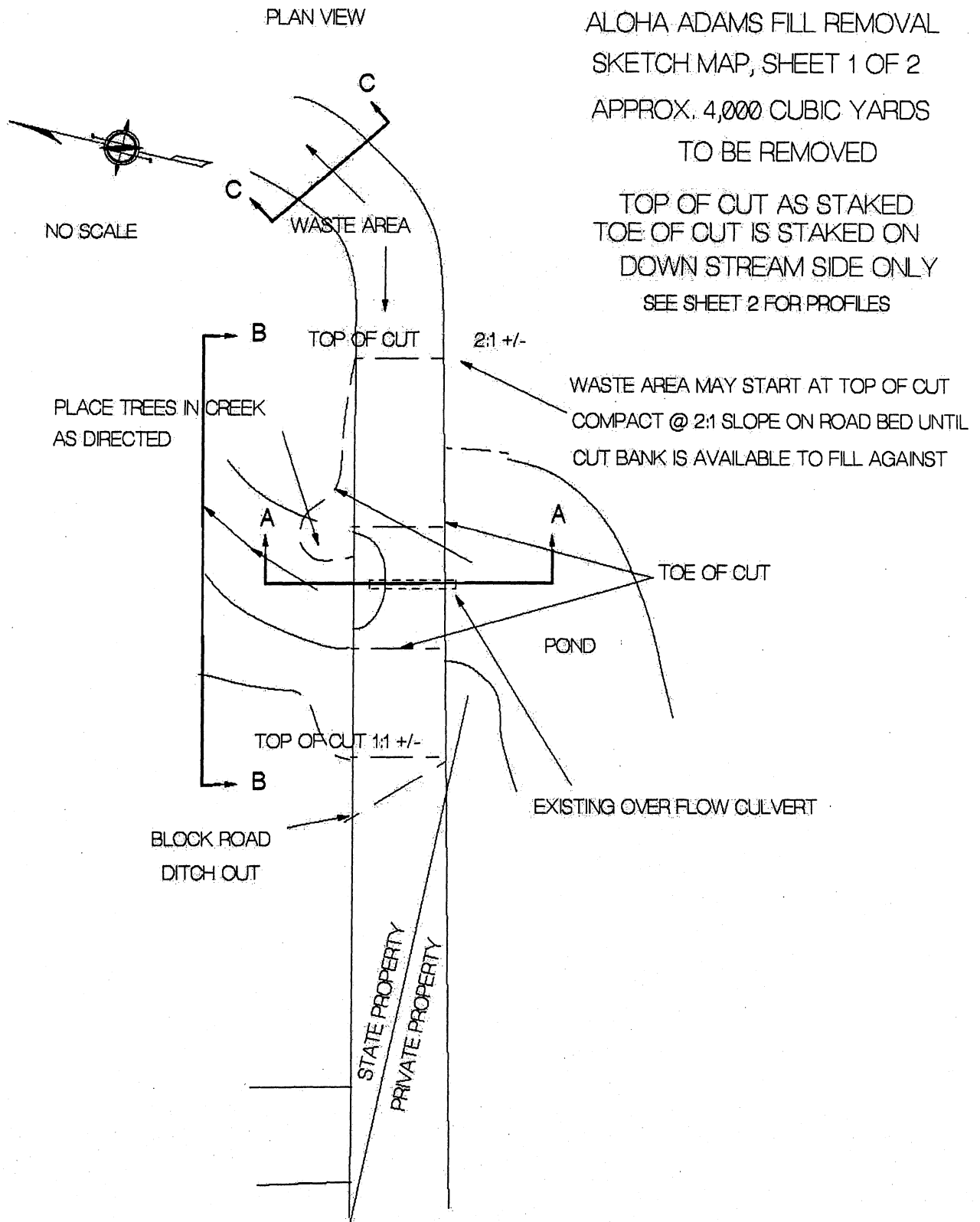


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ALOHA ADAMS FILL REMOVAL
SKETCH MAP, SHEET 2 OF 2
APPROX. 4,000 CUBIC YARDS
TO BE REMOVED
TOP OF CUT AS STAKED
TOE OF CUT IS STAKED ON
DOWN STREAM SIDE ONLY

NOT TO SCALE

VIEW C.C
WASTE AREA PROFILE

COMPACT WASTE
PRESENT ROAD BED
WASTE AREA MAY START AT TOP OF CUT
COMPACT @ 2:1 SLOPE ON ROAD BED UNTIL CUT BANK IS AVAILABLE

VIEW B B
APPROXIMATE CROSS SECTION
OF FILL REMOVAL, LOOKING UPSTREAM
FROM DOWN STREAM CREEK BED

PRESENT ROAD BED
2:1 +/-
CONSTRUCT NEW CREEK CHANNEL
20' +/-
1:1 +/- APPEARS TO MATCH
ORIGINAL GROUND PROFILE
IF NATURAL GROUND IS ENCOUNTERED PRIOR TO
1:1 SLOPE, THE ORIGINAL GROUND PROFILE WILL BE
THE EXTENT OF EXCAVATION, AS DETERMINED
BY THE CONTRACT ADMINISTRATOR

EXISTING OVER FLOW CULVERT

VIEW A A
CROSS SECTION

EDGE OF WATER
NO FURTHER MEASUREMENTS TAKEN
64'
PRESENT ROAD BED
22' +/-
MATERIAL HAS WASHED OUT
POND LEVEL
POTENTIAL STREAM BED, LINE IS A 3% GRADE
ORIGINAL LEVEL IS NOT KNOWN